

D e c l a r a t i o n

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hereby declare  
that I am conversant with the German and English languages and that  
the enclosed document is, to the best of my knowledge and belief, a  
true translation into English of the German language specification  
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in pursuance of the United States Patent Application 60/422773.  
on behalf of RTI Sports.

Cologne, this 11th day of August, 2003



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(Stefan Dumont)

A handwritten signature in black ink, appearing to read "Stefan Dumont". Below the signature, the name "(Stefan Dumont)" is printed in a smaller, standard font.

Carrying bag

The invention relates to a carrying bag, particularly a backpack.

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Particularly if worn during sports activities, carrying bags such as backpacks have the disadvantage that, e.g. during movements of the shoulders, also the backpack itself or a storage bin of the backpack where objects have been stashed away for safekeeping, is moved along. Thereby, the wearing comfort, 10 especially in case of sports activities such as mountain biking or climbing, is considerably affected.

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It is an object of the invention to improve the wearing comfort of carrying bags, particularly of backpacks.

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According to the invention, the above object is achieved by the features of claim 1.

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The carrying bag comprises a receiving container to accommodate objects which are to be carried along. Connected to the receiving container is a carrying device such as e.g. one or a plurality of shoulder straps or shoulder belts. In the carrying bag of the invention, in order to reduce negative properties which are disadvantageous to the wearing comfort of backpacks and the like, the carrying device is with respect to its movements decoupled from the receiving container. This means that a movement of the body, e.g. of the shoulder, or a turning of the torso, will not at all or only slightly take along the receiving container of the inventive carrying bag. For instance, during mountain biking or climbing, the torso can be moved freely at least within certain ranges without causing the receiving container to be moved along. Thereby, the wearing comfort is considerably improved.

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- The decoupling of movements can be performed by the provision of variable-length connection elements whose length will self-adjust or automatically adjust in case of movements. Thus, according to the invention, the wearing system will follow the movements of the body. Thus, in the invention, the carrying device and the receiving container have - at least partially - connecting elements provided therebetween whose length will vary or adapt itself in case of movements. This can be obtained e.g. by elastic connection elements which are preferably arranged between the carrying device and the receiving container.
- According to the invention, in a backpack with two shoulder straps, respective connection elements are provided preferably between the front ends of the shoulder straps, i.e. the ends arranged in the chest and belly region, and the receiving container, as well as between the rear ends of the shoulder straps, i.e. the ends arranged on the user's back, and the receiving container.
- Particularly, the connection elements provided between the front ends and the receiving container are elastic or extensible. Further, it is particularly preferred that the connection elements between the rear ends and the receiving container are elastic.
- Elasticity of the connection elements can be realized by corresponding materials such as rubber. Further, spring elements and the like can be provided. Further, an elastic connection element can be provided as a rope adapted to be wound up, wherein, for instance, a spring will be tensioned when the rope is wound off so that the rope, once it is relieved, will be wound up again, thus reducing the length of the connection element.
- In addition to, or instead of, the provision of variable-length connection elements, the bag itself can have a certain elasticity. For instance, the bag can be wholly or partially consist of an elastic material so that e.g. a movement of the shoulder will cause an extending of the length of the bag.
- In a particularly preferred embodiment, the two lower connection elements, i.e. those connection elements which are connected e.g. to the front ends of

the shoulder straps or the like, are formed by a common pulling element. Thus, the pulling rope is tightly connected to one front end of a shoulder strap, is then guided - preferably through a channel or a guide member - on the receiving container, and is then connected to the front end of the second shoulder strap. Via the pulling element, the movements of the two lower ends of the shoulder straps are coupled to each other. Thereby, a pulling movement acting on one end of the pulling rope, i.e. an enlargement of the distance between the front end of the shoulder strap and the receiving container, will simultaneously effect a reduction of the distance between the front end of the other shoulder strap and the receiving container. This provision of a common pulling rope represents a technically straightforward solution for realizing a decoupling of movements between the carrying device and the receiving container. The need for a complex wind-up device for a tensioned pulling rope and the like is obviated. Further, this embodiment offers the significant advantage that the decoupling of movements is independent from the weight of the receiving container which may heavily vary, depending on the objects to be transported. In case of wholly elastic connection elements, a decoupling of movements can be realized only within certain weight limits. If possible, also the pulling rope or parts thereof can have a certain elasticity.

In a further particularly preferred embodiment, upper connection elements are provided which are connected to rear ends of shoulder straps, i.e. to the ends of the shoulder straps arranged on the user's back. In the first embodiment, these connection elements are preferably elastic. The upper connection elements can be provided in place of the lower connection elements or preferably in addition to them.

In a first inventive embodiment of the upper connection elements, these elements are connected to the receiving container via an intermediate element so that the upper connection elements together with the intermediate element form a Y-shaped structure.

According to a further embodiment, for realizing a decoupling of movements in this region, the upper connection elements, in addition to their elasticity or instead of the latter, can be connected via a turning element to the receiving container. Preferably, in this case, the turning element is centrally connected to the receiving container through a sole intermediate element. Thus, whenever the user moves his or her upper torso back and forth, this movement is deflected via the turning element and will not cause a movement of the receiving container so that the wearing comfort is improved by the provision of the turning element.

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Further, the possibility exists to connect two or more bags via turning elements. The individual bags can thus be turned relative to each other, thus allowing for a relative movement between the bags in the manner of chain links or the like. Thus, it is also effected that a movement of the user's body will not 15 - or at the most slightly - cause the bags, particularly the backpacks, to move along, resulting in an improved wearing comfort.

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In a particularly preferred embodiment of the upper connection elements, also these comprise a common rope line which, if desired, can also be elastic. This common rope line is preferably connected to the two rear ends of the shoulder straps. Preferably, the common rope line is guided via a deflection element for guidance of the common rope line. In this case, the deflection element can be connected to the receiving container, preferably centrally, via a sole intermediate element. In such an arrangement, the intermediate element is connected to the receiving container most preferably at a distance from an inner side, i.e. 25 a back-abutment face, of the receiving container. This has the advantage that the upper connection elements, possibly along with the turning element, the common rope line and/or the deflection element, will not be in abutment on the user's back, thus further improving the wearing comfort, and that a rubbing of these elements on the back and perspiration under these elements are 30 avoided.

The provision of a common rope line in the lower connection elements as well as in the upper connection elements can be realized such that the rope line is arranged between the two respective connection elements and that the channel and the guide element, respectively, are provided on the bag. This arrangement can also be reversed so that a rope or the like is provided on the bag and a common channel or a common guide element is provided between two connection elements. What is relevant is the possible relative movement between the channel or guide member and a rope line. Further, the possibility exists to arrange the rope lines or channels in a crosswise configuration so that each time a lower connection element is connected to an upper connection element. The rope lines can be provided in the form of continuous rope lines, strings, bands, chains and the like. Further, it can be provided that a common rope line comprises an intermediate element, e.g. a load, between straps or the like. Guidance of the rope line or the like is performed either within a channel which can be formed as a closed channel corresponding to a tube or the like, or within an open or partially open channel. Also other guide members, such as loops or eyelets, can be provided.

The receiving container is preferably arranged at hip level. This has the advantage that the weight of the backpack or the carrying bag is not located on the back, i.e. in that region which is undergoing strong movements. Further, the arrangement of the receiving container in the region of the hip safeguards a venting effect on the user's back and thus a reduction of perspiration or an improved evaporation of perspiration. Still further, this arrangement of the receiving container advantageously effects a favorable weight distribution.

A further possibility for the decoupling of movements which can be provided in addition to, or in place of, the above described decoupling of the shoulder straps, is the provision of a hip belt arranged in tight abutment with the body and having the receiving container fastened thereto through a joint, particularly a ball joint. Thus, the receiving container can be pivoted at about an axis extending substantially orthogonally to the user's back or vertically to the hip

belt. This makes it possible that the upper torso can be pivoted without causing an accompanying displacement of the hip belt.

5       The invention will be explained in greater detail hereunder in connection with preferred embodiments thereof with reference to the attached drawings.

Fig. 1     is a schematic side view of a backpack, and

Fig. 2     is a schematic rear view of the backpack.

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The backpack of the invention comprises a receiving container 10 provided for accommodating objects therein which are to be taken along. The receiving container 10 is arranged at the user's hip level and is held on the hip by means of a hip belt 12. Further, the backpack comprises a carrying device 14; 15 the hip belt 12 does not form part of the carrying device 14.

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In the illustrated embodiment, the carrying device 14 comprises two shoulder straps 16,18 which can be connected to each other, such as by a chest strap 20. Thus, the shoulder straps 16,18 are kept in tight abutment on the user's body.

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Front ends 24 of the shoulder straps 16,18 are connected to connection elements 26 by means of intermediate elements 22 which can be adjustable in length and be provided in the form of belt straps. The connection elements 26 are connected to the receiving container 10. In the illustrated embodiment, the connection elements are provided with a rope 28 which is arranged as a Bowden cable and is guided through a tubular Bowden cable sleeve 30. Thus, the Bowden cable sleeve 30 forms a channel or a tube connected to the receiving container 10 and provided for movement of the rope line 28 therein.

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The Bowden cable sleeve 30 is fixedly connected to the receiving container 10. Thus, the rope line 28 can be moved back and forth in the Bowden cable sleeve. Since the two intermediate elements 22 are thus coupled to each other by the common rope line 28, a movement of one intermediate element into one direction will automatically effect a movement of the other intermediate element in the other direction. This corresponds to the user's natural sequence

of movements since, e.g. during a bicycle ride or mountain climbing, both shoulders will not be lifted simultaneously; the user will instead normally carry out movements which are opposed to each other. This is the case e.g. also when turning the upper torso.

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Further, apart from the lower connection elements 26, the backpack of the invention also comprises upper connection elements 34. The connection elements 34 are connected to the rear ends 38 of the two shoulder straps 16,18, optionally through intermediate elements 36. In the illustrated embodiment, 10 the connection elements 34 are provided with a common rope line 40 guided on a deflection element 42. The rope line 40 is connected to the two intermediate elements 36. Also the deflection element comprises a channel or a Bowden cable sleeve having the rope line guided therethrough. Corresponding to the movement described with reference to the lower connection elements 26, 15 a movement of the intermediate element 36 or one of the two shoulder straps 16,18 into one direction, e.g. upwards, causes a downward movement of the respective other intermediate element or shoulder strap, thus effecting a movement of the rope line 40 in the direction of arrow 44.

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The deflection element 42, being part of the connection elements, is connected to the receiving container 10 through a further component of the connection elements, notably through an intermediate element 46 which can be a belt with buckle. In this regard, the attachment point 48 between the intermediate element 46 and the receiving container 10 is provided at a distance from an inner side 50 of the receiving container. The inner side 50 is the back abutment face where the receiving container 10 rests on the user's back. By the distance of the attachment point, it is safeguarded that the upper connection elements 34 will not abut on the user's back.

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Claims

1. A carrying bag, particularly a backpack, comprising  
a receiving container (10) for receiving objects to be transported, and  
a carrying device (14) connected to the receiving container (10),

c h a r a c t e r i z e d i n

that the carrying device (14) is decoupled in its movements from the receiving container (10).

2. The carrying bag according to claim 1, characterized in that the carrying device (14) is connected to the receiving container (10) via length-variable connection elements (26,34) whose length will automatically adapt during movements.
3. The carrying bag according to claim 2, characterized in that the connection elements (26,34) are elastic.
4. The carrying bag according to any one of claims 1-3, characterized in that the carrying device (14) comprises two shoulder straps (16,18) having their front ends (24) connected to the receiving container (10) respectively via a lower connection element (26).
5. The carrying bag according to claim 4, characterized in that the two lower connection elements (26) comprise a common string line (28).
6. The carrying bag according to claim 5, characterized in that the string line (28) is guided through a channel provided on the receiving container (10).

7. The carrying bag according to any one of claims 1-3, characterized in that the carrying device (14) comprises shoulder straps (16,18) on the rear ends (38) of which a respective upper connection element (34) is connected to the receiving container (10).
8. The carrying bag according to claim 7, characterized in that the two upper connection elements (34) are guided to join each other together with an intermediate element (46) in a Y-shaped configuration.
9. The carrying bag according to claim 7 or 8, characterized in that the upper connection elements (34) are connected to the receiving container (10) by a turning element.
10. The carrying bag according to any one of claims 7-9, characterized in that the upper connection elements (34) comprise a common string line (40) connected to the two rear ends (38) of the shoulder straps (16,18).
11. The carrying bag according to claim 10, characterized by a deflection element (42) for guidance of the common string line (40).
12. The carrying bag according to any one of claims 7-11, characterized in that the upper connection elements (34) are connected to the receiving container (10), optionally via the intermediate element (46), at a distance from an inner side (50) of the receiving container (10).
13. The carrying bag according to any one of claims 1-12, characterized in that the carrying device (14) is connected to the receiving container (10) in a detachable manner.
14. The carrying bag according to any one of claims 1-13, characterized in that the receiving container (10) is arranged substantially at hip level.

## ABSTRACT

Carrying bag

A carrying bag, particularly a backpack, comprises a receiving container (10) for receiving objects to be taken along, and a carrying device (14) connected to the receiving container (10). The carrying device (14) is decoupled in its movements from the receiving container (10) by the provision of rope lines (28 and 40, respectively) which can be displaced in the direction marked by the arrows (32 and 44, respectively).

(Fig. 2)

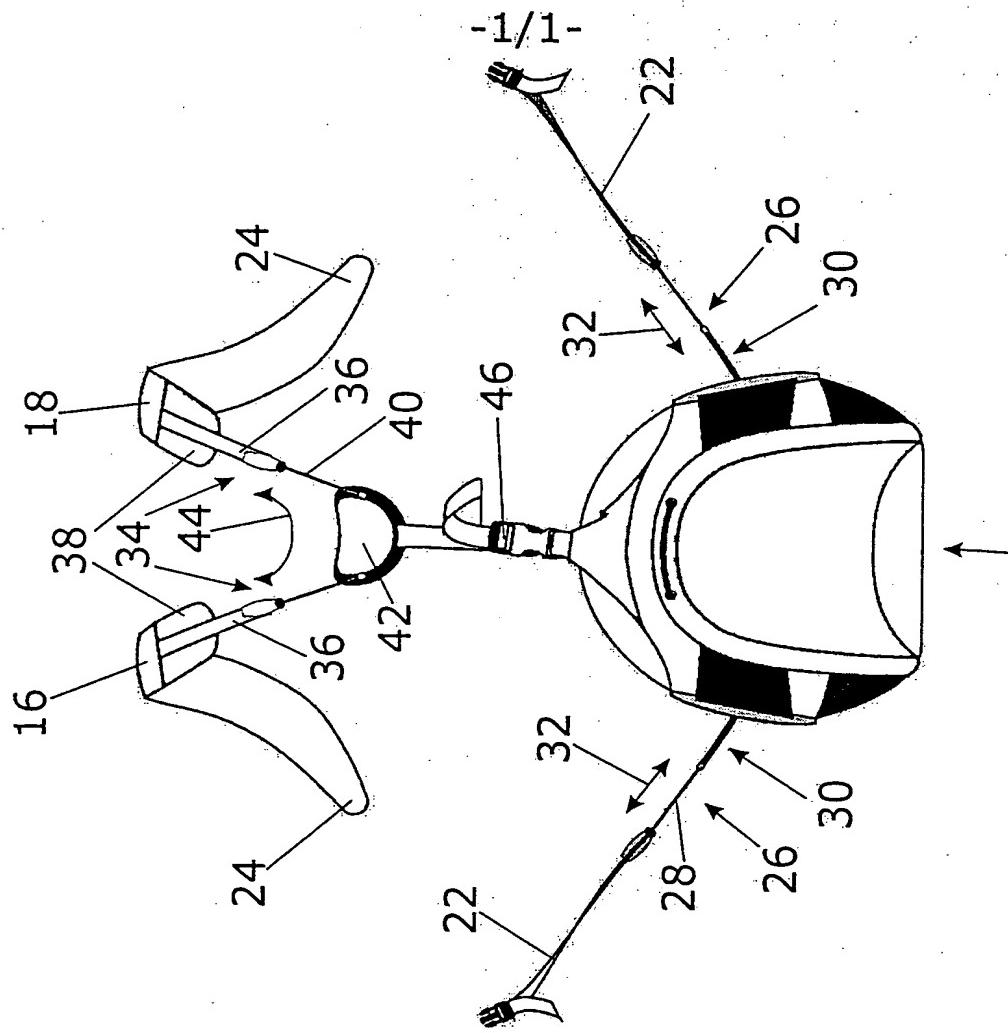


Fig.2

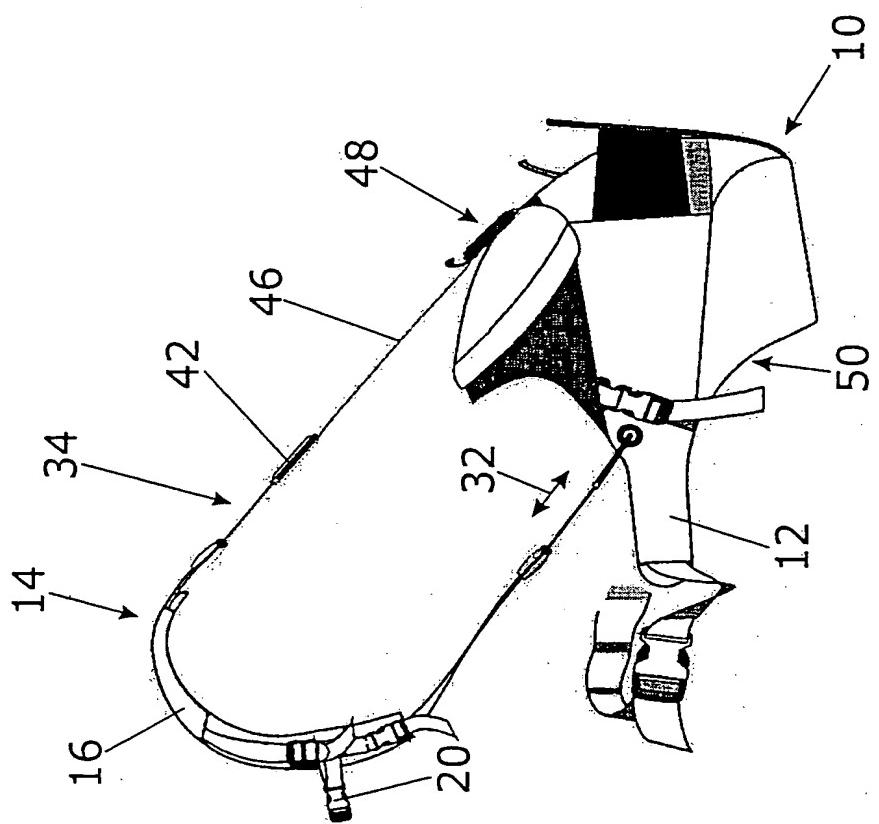


Fig.1